

The Computational Difference between Words and Phrases and Its Consequence (Summaries of the Papers Read at the 33rd Annual Meeting of the Tsukuba English Linguistic Society)

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The Computational Difference between Words and Phrases and Its Consequence

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Researchers in Generative Grammar have made an attempt to formulate the faculty of language (FL) in a simple manner. The strong minimalist thesis (SMT) is the most prominent manifestation of this enterprise (Chomsky (2000) et seq.): FL is a “perfect solution” to the conditions imposed by the performance systems (i.e. the conceptual-intentional system and the sensorimotor system). Under this view, any syntactic derivation must be efficient with no redundancy. Richards (2007: 566) states that derivation obeys efficient computation in the form that Value and Transfer of unvalued uninterpretable features (uFs) happen together (cf. (1)), in conformance with SMT.

This proposal is worth reconsidering within the framework of Distributed Morphology (DM) initiated by Halle and Marantz (1993). This framework requires words as well as phrases to be generated at narrow syntax as the only derivational component, an idea known as the single engine hypothesis (SEH) (Arad (2003:738)). SEH predicts, in concert with Richards’s approach, that both words and phrases will uniformly meet the condition that Value and Transfer of uFs apply in parallel. We basically view this prediction as correct but crucially propose that the level of words understands the operation of Value differently from the way that the level of phrases does. Put it clearly, Value is the process of categorization by Merge for words; the same is the process of feature valuation by Agree for phrases. We also show that this computational difference between words and phrases yields an interesting consequence for verb particle constructions (VPCs) in English.

To materialize our proposal, let us first sketch the work of Richards (2007) and then introduce the central ideas of DM in such a way that we ensure an organic linkage between them, following Marantz (2001, 2007). Based on an original version of Chomsky (2008), Richards (2007) proposes that the theory of feature inheritance enables Value and Transfer of uFs to take place simultaneously:

- (1) $[_{CP} C_{[AF]} [_{TP} T_{[AF]} [_{VP} \text{Subj } v_{[AF]} [_{VP} V_{[AF]} \text{Obj}]]]]$

Within traditional frameworks (Chomsky (2000, 2001)), the nonphase head T is an inherent possessor of the Agree feature (AF), so feature valuation by Agree occurs prior to the introduction of the phase head C, which drives Transfer. This gap in operational application is a departure from SMT because Transfer cannot immediately hand the AF that was assigned a value by Agree to the interfaces. As

shown in (1), however, the theory of feature inheritance (Chomsky (2007, 2008)) circumvents this departure, compelling the nonphase head T to derivationally inherit the AF from the phase head C, which allows for the simultaneous application of Value and Transfer of uFs. The same holds true of the vP-level structure. The result is efficient computation. Richards thus concludes that derivation alternates phase heads and nonphase heads.

It is important to verify whether this conclusion can also accommodate to the level of words under SEH. DM derives a word by merging a category-neutral Root and a phasal categorizer (e.g. *v*, *n*, and *a*). The derived word undergoes Transfer, constituting a phonological and semantic unit. SEH forces this operation to apply simultaneously with Value under the theory of feature inheritance. It is nontrivial, however, that feature inheritance and feature valuation by Agree take place at the level of words. Suppose now that Roots are nonphase heads and that categorizers are phase heads. Then, SEH expects Roots to inherit the AF from categorizers in a derivational fashion. Given, however, that Embick and Noyer (2007:295) define Roots as bearing no formal feature internally, it is natural that Roots cannot possess such a formal feature as the AF derivationally as well. This argumentation in essence means that categorizers have no AF, which makes nil feature inheritance and thus feature valuation by Agree at the level of words. In effect, the following grammatical contrast from Booij (1993:41) confirms the validity of this reasoning:

- (2) a. werkvrouw ‘lit. work woman, chairwoman’
 b. *werkt-vrouw (‘-t’ is 3rd pers. sg.)

The contrast in (2) indicates that Dutch tolerates no agreement in VN compounds. This fact suggests that there is no feature valuation by Agree at the level of words.

Is it then that, contra SEH, word-internal derivation is not associated with the operation of Value at all? Our answer is negative; rather, we propose that Value amounts to the process of categorization by Merge for words and that its absence discourages derivation from converging at the interfaces. The merger of Roots and categorizers accordingly applies in parallel with Transfer, which observes the condition offered by Richards (2007) that Value and Transfer of uFs happen together, thus yielding efficient computation. The lack of AF inheritance does not prevent word-internal derivation from stacking (non)phase heads in layers. (3a) and (3b) exhibit the difference in derivation between phrases and words.

- (3) a. [phase head—nonphase head—phase head—nonphase head...]
 b. [phase head—...—phase head—nonphase head—...—nonphase head]

Although both structures achieve efficient computation via simultaneous application of Value and Transfer, Value for (3a) signifies the process of feature valuation by Agree under the mechanism of feature inheritance and Value for (3b) denotes the process of categorization by Merge. As is well known, ϕ -agreement phenomena demonstrate the existence of the process of “Value by Agree.” On the other hand, category-changing phenomena support the presence of the process of “Value by Merge.” The derivation of *realization* creates the structure $[[\sqrt{\text{REAL}} \ v, -iz] \ n, -ation]$, in which *v* verbalizes the Root as a nonphase head and then *n* nominalizes this Root-*v* complex. These categorization processes correspond to Value by Merge, which occurs together with Transfer, thus producing efficient computation.

Crucially, the analysis proposed here succeeds in deriving two structures comparable to two types of VPCs by reexamining the constitution of a *vP*-level structure. Rackowski (1999) and Travis (2000) argue that a predicate structure comprises *v*-Asp-V through the analysis of complex predicates in Tagalog. Our analysis interprets *v*-Asp-V as *v*-Asp-*v*- $\sqrt{\text{ROOT}}$, where Asp behaves as a nonphase head. It should be noted here that the presence of a functional nonphase head “*f*” like Asp is crucial in forming a structure like (3a) that alternates phase heads and nonphase heads, with *v* (i.e. a transitivizer) and *v* (i.e. a categorizer) both phasal. Further, the formulation of word structures shown in (3b) does not prohibit *f* from appearing in word-internal derivation. These considerations lead us to the following possible derivations:

- (4) a. $[_{vP} \ v \ [_{fP} \ f \ [_{vP} \ \sqrt{\text{ROOT}} \ v]]]$ (phrasal derivation: aspectual particles)
 b. $[_{vP} \ [_{fP} \ \sqrt{\text{ROOT}} \ f] \ v]$ (word-internal derivation: idiomatic particles)

“Aspectual particles” and “idiomatic particles” in the sense of Jackendoff (2002) follow from these two types of derivations under the assumption that one of the phonetic realizations of *f* is a particle (we replace the original term verb-particle idioms with idiomatic particles for simplicity). It is highly significant under the analysis proposed here whether phrasal or word-internal derivation introduces *f*. Recall that the merger of a Root and *v* induces categorization, a procedure for deriving a word (here, a verb). With this in mind, the introduction of *f* into word-internal derivation (cf. (4b)) operates on the lexical meaning of the verb *vP*; the introduction of *f* into phrasal derivation (cf. (4a)) gives an aspectual change to the lexical meaning of the verb *vP*.

Let us take as an instance the aspectual particle *drink up* and the idiomatic particle *look up*, which are generated based on (4a) and (4b), respectively. Because phrasal derivation creates *drink up*, the relevant particle aspectually changes the

lexical meaning of the verb *drink*. By contrast, *look up*, which word-internal derivation produces, exerts on the lexical meaning of the verb *look*. The result is as follows: the aspectual particle *drink up* expresses the compositional meaning of *drink completely*, with the lexical meaning of the verb *drink* invariant; the idiomatic particle *look up* represents the non-compositional meaning of *consult* because the lexical meaning of the verb *look* alters.

The following contrasts corroborate the plausibility of the proposed analysis:

- (5) a. John drank up the beer. (cf. John drank the beer.)
 b. Mikey looked up the reference. (cf. *John looked the reference.)
- (6) a. Jones drank off the water, and Peters drank up the beer.
 b. Jones looked over the matter, and Peters *looked up the word in a dictionary.

The contrast in (5) illustrates that the idiomatic particle in (5b), unlike the aspectual particle in (5a), changes the selectional restriction of the verb. Under our analysis, *up* in *drink up* merges with the word *drink* already categorized, as shown in (4a). In contrast, *up* in *look up* is categorized along with $\sqrt{\text{LOOK}}$, as indicated in (4b). Whereas the verb solely selects an object in (5a), the verb-particle combination selects an object in (5b). This difference in derivation explains the presence or absence of the change of the selectional restriction of a verb.

Such a derivational difference also successfully captures the behavioral contrast in gapping between (6a) and (6b). Suppose here that the site that undergoes gapping corresponds to the domain referred to as a phase. Then, the structure in (4a), where the Root-v complex constitutes a (verbal) phase, should license the gapping of the verb alone. In effect, the second conjunct of (6a), which is related to the structure in (4a), can undergo the gapping operation. Contrastively, the second conjunct of (6b), which has to do with the structure in (4b), does not allow for the application of gapping. This failure to license gapping results from the structure of an idiomatic particle, in which the Root-particle complex forms a (verbal) phase together with the categorizer *v*. The second conjunct of (6b) thus cannot license gapping by deleting the verb alone.

In sum, by interpreting Richards's (2007) approach from the perspective of DM, we proposed that Value is the process of categorization by Merge for word-internal derivation but is the process of feature valuation by Agree for phrasal derivation. We also showed that two types of VPCs comparable to aspectual particles and idiomatic particles follow as a natural consequence of the proposed analysis.